We claim:



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An immunogenic composition, comprising:

a DNA mmunogen; and

a chemokine or a polynucleotide encoding a chemokine.

- 2. The immunogenic composition of claim 1 wherein the DNA immunogen comprises a polynucleotide encoding a viral immunogen.
- 3. The immunogenic composition of claim 2 wherein the polynucleotide encodes a hepatitis C virus non-structural polypeptide.
- 4. The immunogenic composition of claim 3 wherein the hepatitis C virus non-structural polypeptide is selected from the group consisting of NS3, NS4, NS5a, and NS5b.
- 5. The immunogenic composition of claim 2 wherein the polynucleotide encodes an HIV polypeptide.
- 6. The immunogenic composition of claim 5 wherein the HIV polypeptide is a gag polypeptide.
- 7. The immunogenic composition of claim 1 wherein the DNA immunogen comprises a polynucleotide encoding an immunogen expressed by a tumor.
- 8. The immunogenic composition of claim 1 wherein the chemokine is macrophage inflammatory protein 1α (MIP- 1α).
- 9. The immunogenic composition of claim 1 wherein the chemokine is B lymphocyte chemokine (BLC).
- 10. The immunogenic composition of claim 1 further comprising a pharmaceutically acceptable carrier.

11. A method of enhancing an immune response to a DNA immunogen in a mammal, comprising the step of:

administering to the mammal (i) a chemokine or a first polynucleotide encoding a chemokine and (ii) a DNA immunogen, whereby an immune response to the DNA immunogen is enhanced.

12. The method of claim 11 wherein a chemokine is administered.

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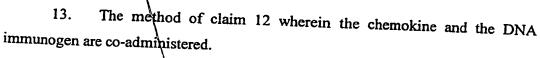
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- 14. The method of claim 12 wherein the chemokine is administered prior to administration of the DNA immunogen.
- 15. The method of claim 12 wherein the DNA immunogen is administered prior to administration of the chemokine.
- 16. The method of claim 11 wherein a first polynucleotide encoding the chemokine is administered.
- 17. The method of claim 16 wherein the first polynucleotide and the DNA immunogen are co-administered.
- 18. The method of claim 16 wherein the polynucleotide is administered prior to administration of the DNA immunogen.
- 19. The method of claim 16 wherein the DNA immunogen is administered prior to administration of the first polynucleotide.
- 20. The method of claim 16 wherein a second polynucleotide which comprises(a) the first polynucleotide and (b) the DNA immunogen is administered.
- 21. The method of claim 11 wherein the chemokine is macrophage inflammatory protein 1α (MIP- 1α).
- 22. The method of claim 11 wherein the chemokine is B lymphocyte chemokine (BLC).
- 23. The method of claim 11 wherein the DNA immunogen comprises a polynucleotide which encodes a hepatitis C virus non-structural polypeptide.
- 24. The method of claim 23 wherein the hepatitis C virus non-structural polypeptide is selected from the group consisting of NS3, NS4, NS5a, and NS5b.

25 polypeptide.

- 25. The method of claim 23 wherein the polynucleotide encodes an HIV polypeptide.
- 26. The method of claim 25 wherein the HIV polypeptide is a gag polypeptide.
 - 27. The method of claim 11 wherein the mammal is a human.
- 28. The method of claim 11 wherein the immune response is an antibody response.



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المنافعة ال المنافعة ال 29. The method of claim 11 wherein the immune response is a cytotoxic T lymphocyte response.

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